

Xplor



THESE
CATS ARE
WILD

MISSOURI IS CRAWLING
WITH CRAZY CATERpillars

CONTENTS

FEATURES

6 Ahead of the Hatch

Many animal moms lay eggs. But what happens to 'em after they're laid? It depends ...

12 Crazy Cats

Some are huge. Some are hairy. Some are colorful. Some look scary. Welcome to the wild world of caterpillars.

CREATURE FEATURE

10 Shovelnose Sturgeon

Pull out this poster and tape it to your wall to make your room look wild.

DEPARTMENTS

- 2 Strange but True
- 3 What Is It?
- 3 Two Truths, One Lie
- 4 How To
- 18 Xplor More
- 20 Get Out!
- 21 Go Find It!



Male indigo buntings dress to impress! But the brilliant blue you see is only an illusion. Their feathers contain no blue pigment. Instead, tiny structures in the feathers reflect certain wavelengths of light that our eyes perceive to be blue.



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ON THE COVER

Black Swallowtail Caterpillar

STRANGE BUT TRUE

Your guide to all the
UNUSUAL, UNIQUE,
AND **UNBELIEVABLE**
stuff that goes on in nature

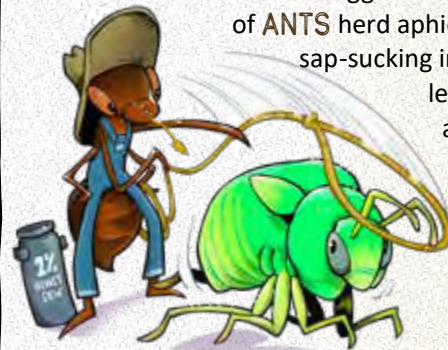
When two **RUBY-THROATED HUMMINGBIRDS** visit the same feeder, one usually goes into a feather-ruffling rage. Full-on fights sometimes erupt in which hummers swing and jab their beaks at each other like swords.



A mama **ROADRUNNER** does nearly all the work of building a nest. Her mate's main job is to bring a steady supply of twigs. If he doesn't work fast enough for her taste, she lets him know with an angry, whining call.



Like six-legged cowboys, certain kinds of **ANTS** herd aphids, moving the tiny, sap-sucking insects around from leaf to leaf. In return, aphids give the ants honeydew, a sweet liquid that comes out of the not-so-sweet end of an aphid.



Not only do **RED FOXES** have whiskers on their snouts, they also have them on their legs. Called carpal whiskers, these stiff, sensitive hairs help foxes navigate their surroundings and feel for prey in the dark.

No matter when the so-called "zombie fungus" infects a **HOUSEFLY**, the fly always dies at dusk. Biologists believe cool, damp conditions, which are more likely after sunset, help spread the fungus's spores to other flies.



NORTH AMERICAN BULLFROGS croak out calls that sound like deep, rumbling burps. To humans, all frog burps sound alike. But bullfrogs can recognize the voices of their neighbors, which helps them hear when a strange frog creeps too close.



BATS are the only mammals in Missouri that can truly fly. Despite their name, flying squirrels can only glide from one tree to another. They can't flap their paws and take flight.



WHAT IS IT?

DON'T KNOW? Jump to Page 21 to find out.

- 1 I fly under cover of night,
- 2 With wings that are spotted and white.
- 3 Bats give me a terrible fright,
- 4 So I dive before one takes a bite.



TWO TRUTHS, ONE LIE

Which fascinating fact is actually a fib?

Answer on Page 21



Peregrine falcon

- 1 Male and female peregrine falcons look similar, but one way to tell them apart is by their size. Males are almost twice as big as females.
- 2 Bombs away! When a peregrine spots prey, it folds its wings and dives. *WHOOSH!* In free fall, the bullet-shaped bird can reach speeds over 200 miles per hour.
- 3 During high-speed dives, little bumps inside a peregrine's nostrils keep air from rushing up its nose and popping its lungs like over-inflated balloons.

HOW TO

CATCH A CRAYFISH

Nearly 40 kinds of crayfish live in Missouri's streams, marshes, and ponds. With pinching pincers, four pairs of walking legs, and a lobster-like tail, crayfish are one of the Show-Me State's most interesting animals. Here's how to catch one to get a closer look.

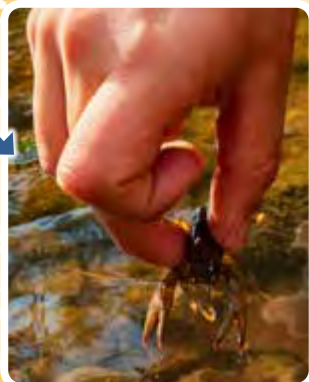
CRAYFISH WRANGLING

Have you caught a crayfish or has the crayfish caught you? Even if a crayfish pinches you, it usually doesn't hurt too much. But to keep it from happening, hold the mudbug by its carapace, the hard, saddlelike shell just behind the claws. After you've gotten a good look, always put a captured crayfish back exactly where you found it.

CATCHING CRAYFISH BARE-HANDED

Crayfish can be found crawling around rocks and stones at the bottom of shallow streams. You can scoop them up using an aquarium net, but it's more of a challenge — and more fun — to catch them with your bare hands. These tips will make you an expert crayfish-catcher in no time:

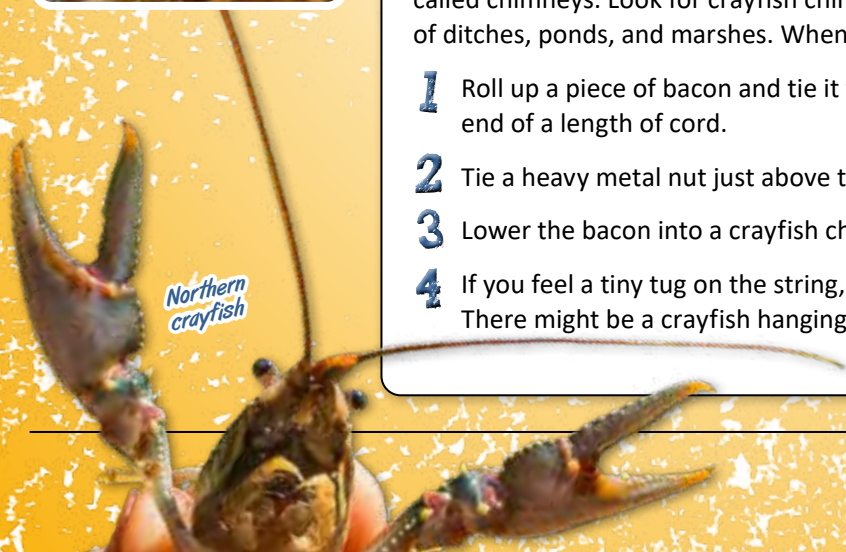
- Crayfish escape predators with a quick flip of their tail, which causes them to rocket backward in the water. Because of this, try to approach a crayfish from behind.
- Once you've spotted a crayfish, slowly lower your hand into the water. Be careful not to splash or make sudden movements.
- When your hand is just an inch or two away, reach quickly but gently to grab the crayfish.
- Crayfish are fast! (You would be, too, if you saw a giant hand coming at you!) Keep trying if you don't catch one on your first attempt.



FISHING FOR MUDBUGS

Some crayfish tunnel down into soggy ground to stay cool and wet. As they dig, they use their legs and mouthparts to roll mud into little blobs. They stack the blobs at the surface to form short towers called chimneys. Look for crayfish chimneys along the edges of ditches, ponds, and marshes. When you find one, try this:

- 1 Roll up a piece of bacon and tie it to the end of a length of cord.
- 2 Tie a heavy metal nut just above the bacon.
- 3 Lower the bacon into a crayfish chimney.
- 4 If you feel a tiny tug on the string, slowly pull it up. There might be a crayfish hanging on to the other end.



Ahead of the Hatch

Lots of critters lay eggs. But what do mom and pop — or, in some cases, other animals — do with the eggs after they're laid? It depends ...



Guard 'em

After a mama hellbender lays her eggs, dad goes on guard duty. Hellbenders live in Ozark streams, and their nests are usually hidden under large rocks or logs. Dad stations himself at the nest's entrance to keep fish and other predators from sneaking inside to eat the eggs. While he watches, he swishes his tail and wiggles his body, which moves fresh water over the eggs.

Carry 'em

Babies on board! A mama wolf spider wraps her eggs in a silken sac and then sticks it to her rear-end. She carries the pea-sized sac with her as she crawls around hunting for insects. When her babies are ready to hatch, mom tears open the sac, and dozens of tiny spiders climb onto her back.



Hide 'em

Killdeer parents hide their eggs in plain sight. They scratch out a shallow depression on the ground in a pasture, sandbar, or gravel parking lot, and mom lays four to six speckled eggs inside. The eggs blend in so perfectly against a rocky background that they become nearly invisible, even from just a few feet away.



Bury 'em

Like a pirate burying treasure, a North American snapping turtle digs a hole and lays about three dozen ping-pong-ball-sized eggs inside. The nest's temperature determines whether the babies will be boys or girls. Warmer temperatures produce mostly girl turtles, while cooler temperatures produce mostly boys. The turtle toddlers tunnel out of their dirty nursery about three months after the eggs are laid.





Float 'em

North American bullfrogs lay a lotta eggs! Each mama frog lays about 10,000 eggs, and older frogs may lay over 20,000. The tiny eggs float on the water's surface like a jiggly raft made of jelly. Many get gobbled up by fish — who doesn't enjoy a jelly sandwich? But because there are so many eggs to start with, quite a few turn into tadpoles.

Sit-on 'em

Birds, like this American robin, sit on their eggs, and it's not because they offer a comfy seat. The parent bird's body keeps the eggs at the right temperature so the babies inside can grow. Some birds don't begin incubating until the last egg is laid. This way, all of the eggs hatch at about the same time.



Eat 'em

Eggs pack a lot of energy, protein, and vitamins into a convenient, easily snackable package.

It's no wonder that lots of critters — from raccoons and skunks to snakes and fish — rarely pass up a chance to eat an egg or two for breakfast (or lunch or dinner). With all the egg-munching going on, it's no wonder why parents use so many tricks to keep their eggs safe.



Wear 'em

Most dads love to give their kids a piggyback ride, but giant water bugs go the extra mile. A female water bug glues her skinny eggs — up to 100 of them — onto her mate's back. Dad carries the eggs with him everywhere he goes until they hatch about three weeks later. During this time he can't fly, and it's harder for him to swim.



Cowbird
egg

Lay 'em and leave 'em

Do you notice anything odd about this nest? One of the eggs doesn't look like the others. The oddball was laid by a brown-headed cowbird. Cowbirds don't raise their own babies. Instead, they let feathered foster families care for their young. The energy a cowbird mom saves by not raising her chicks lets her lay up to 50 eggs each year.

As we've seen, there are lots of different things that can happen to an egg after it's been laid. But the goal for each egg is the same: to have a healthy baby hatch out, grow up, and, eventually, lay some eggs of its own.

Nature works in eggstraordinary ways, huh?



Baby three-toed
box turtle

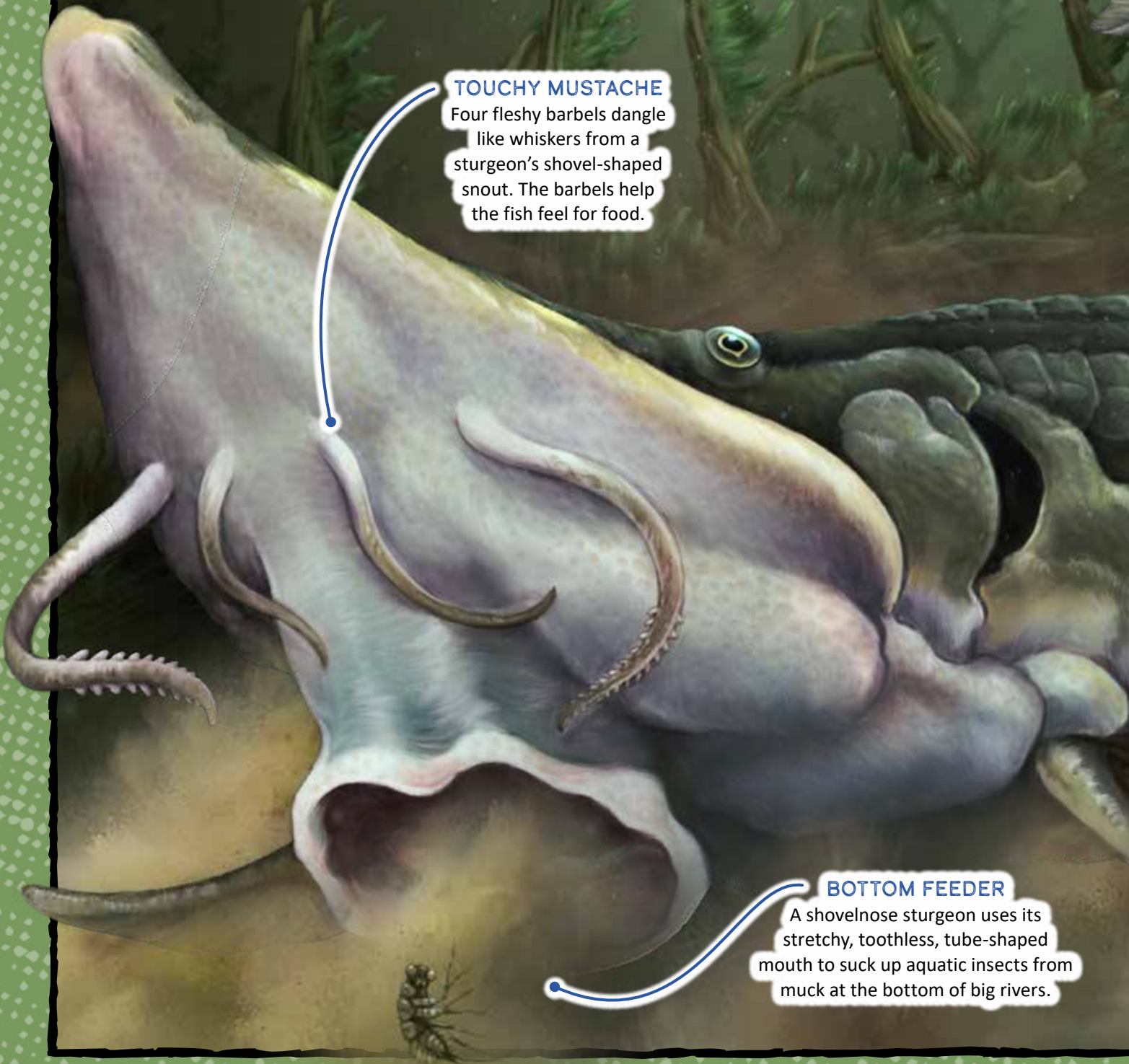
SHOVELNOSE STURGEON

TOUCHY MUSTACHE

Four fleshy barbels dangle like whiskers from a sturgeon's shovel-shaped snout. The barbels help the fish feel for food.

BOTTOM FEEDER

A shovelnose sturgeon uses its stretchy, toothless, tube-shaped mouth to suck up aquatic insects from muck at the bottom of big rivers.





LITTLE LOAF

Although they can grow up to 30 inches long and weigh over 5 pounds, most shovelnose sturgeons stretch only a little longer than this poster and weigh just a bit more than a bread loaf.

FINTASTIC ARMOR

Instead of fish scales, a shovelnose sturgeon is protected by five rows of bony plates, one row along the top and two along each side. Its belly is also covered by plates.



Crazy Cats

Some are huge. Some are hairy. Some are spiky. Some look scary. Some are pretty. Some are not. Some, literally, look like snot. Welcome to the wild world of caterpillars.

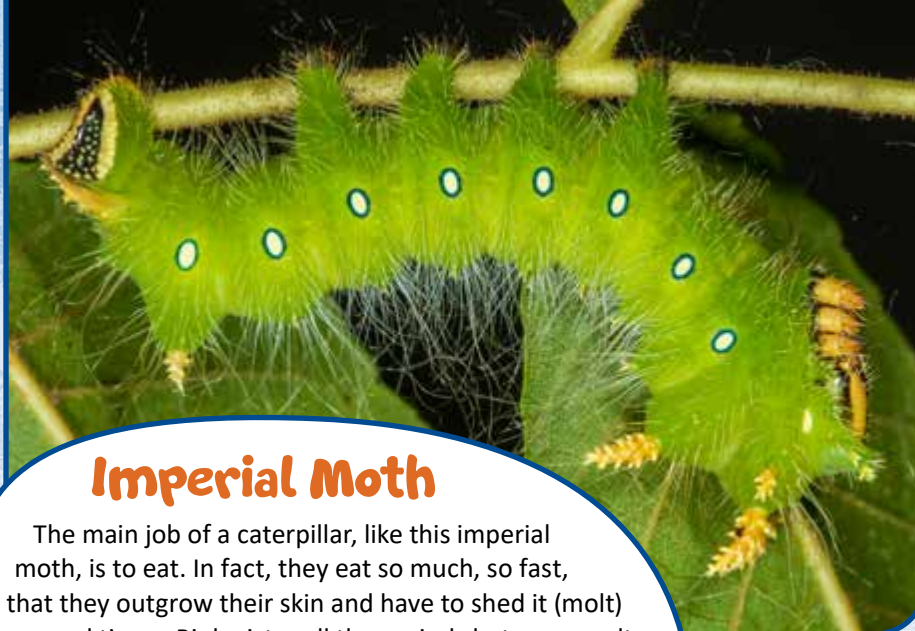
Spicebush Swallowtail

This colorful caterpillar wears a disguise. The dark spots on its head make it look like a snake, which scares away hungry birds. Caterpillars have special spit glands that make silk. Spicebush cats use the silk to bind leaves into tubes. They hide inside these tiny tents during the day and come out after dark to gobble spicebush and sassafras.

White-Marked Tussock Moth

After hatching from an itty-bitty egg, a tussock moth caterpillar dangles on a thread of silk. When the breeze blows, the silk snaps, and the baby insect gets carried away like a hang glider. *Wheee!* This cat's fluffy fuzz makes it look like a Muppet, but don't touch it! The hairs have barbs that work their way into your skin and cause an itchy rash.



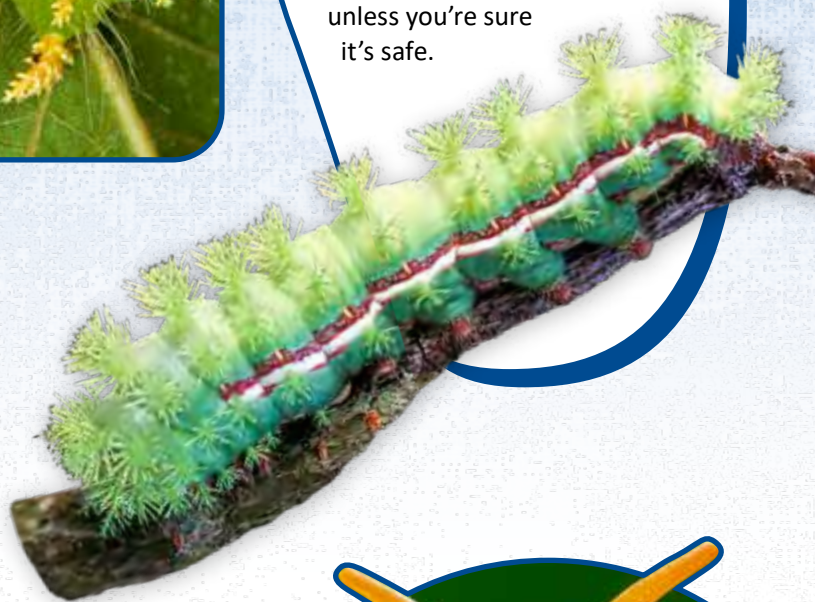


Imperial Moth

The main job of a caterpillar, like this imperial moth, is to eat. In fact, they eat so much, so fast, that they outgrow their skin and have to shed it (molt) several times. Biologists call the periods between molts “instars.” Most caterpillars go through four or five instars before turning into a moth or butterfly.

Io Moth

To hungry birds, caterpillars look like wiggly sausages. Since they're too slow to wiggle away, many cats, like this io caterpillar, are armed with poison-tipped spines that pack a painful punch. Because of this, it's smart to avoid touching any caterpillar unless you're sure it's safe.



Hickory Horned Devil

This fierce-looking leaf-eater is Missouri's largest caterpillar. Before turning into fuzzy, colorful regal moths, hickory horned devils can grow nearly 6 inches long — about the size of a hot dog. Though they look dangerous, this cat's spikes are only for show. They can't hurt you.

Eastern Tiger Swallowtail

Missouri has six kinds of swallowtail butterflies, and all of the caterpillars have a Y-shaped organ that pops out when they're scared or angry. It's called an osmeterium (oz-meh-tear-ee-uhm), but “stink horn” might be a better name. It smells awful and makes predators, like spiders, rethink their meal choice.





Zebra Swallowtail

This pretty caterpillar has an ugly side. Although it loves to munch on the leaves of pawpaw trees, this cat is also a cannibal, which means it eats other caterpillars. That's why zebra swallowtail moms usually lay only one egg on each plant.



Spotted Apatelodes

This fantastically fluffy fella makes most hairy caterpillars look clean-shaven. Its flowing locks, which can be either white or yellow, are so shaggy that most people never notice the caterpillar's surprisingly colorful legs. Under the fuzz, each proleg is bright red, as if it were wearing a ruby slipper.



Beautiful Wood-Nymph

Moths and butterflies are often more beautiful than the caterpillars they come from. But that's not always the case, and the beautiful wood-nymph is a good example of the exception. The stunning orange-and-white-striped caterpillars turn into moths that look like ... well, poop.

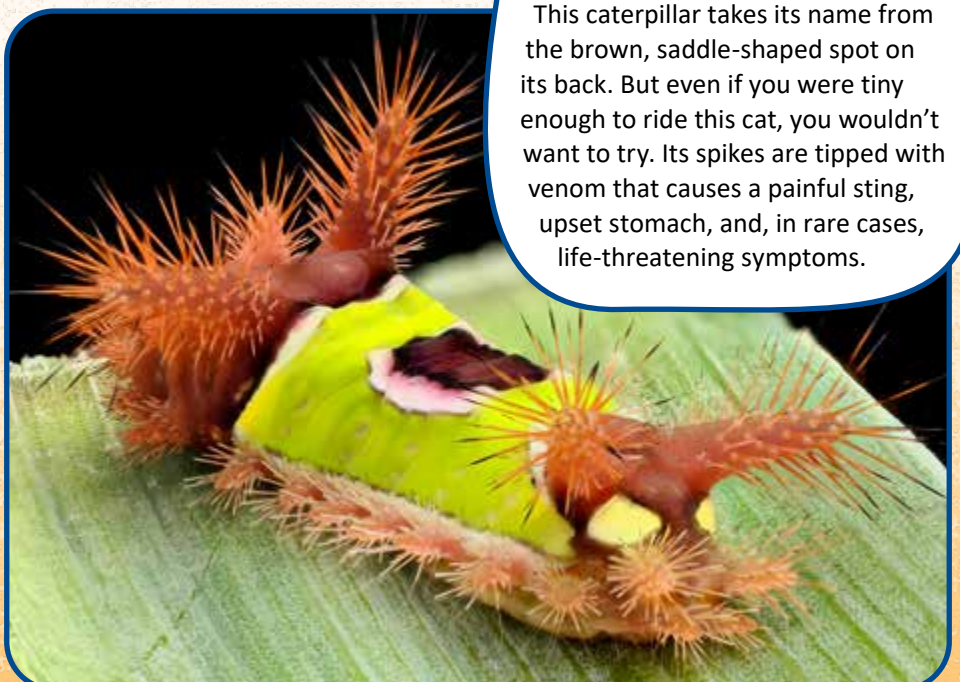


Saddleback Caterpillar

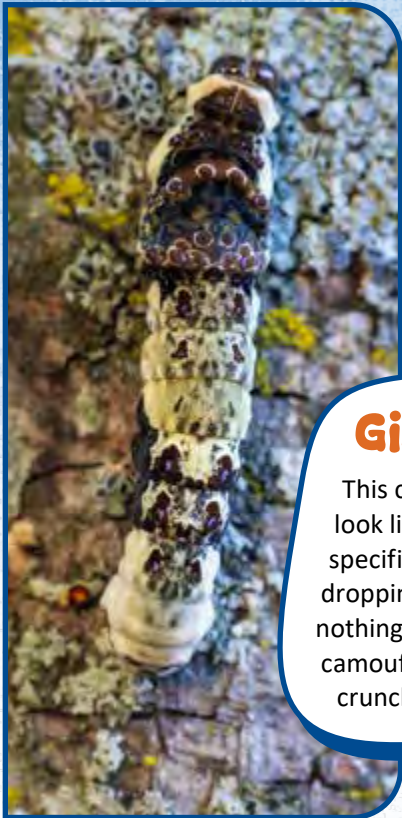
This caterpillar takes its name from the brown, saddle-shaped spot on its back. But even if you were tiny enough to ride this cat, you wouldn't want to try. Its spikes are tipped with venom that causes a painful sting, upset stomach, and, in rare cases, life-threatening symptoms.

White-Lined Sphinx Moth

When threatened, sphinx moth caterpillars lift up the front half of their body like a rearing horse. This reminded early biologists of the Sphinx, an enormous statue in Egypt that has the head of a human and the body of a lion.



SPOTTED APATELODES, BEAUTIFUL WOOD-NYMPH: © ONDREICKA / ADOBE STOCK; SADDLEBACK CATERPILLAR: © MACROSCOPIC SOLUTIONS / ADOBE STOCK



Black Swallowtail

When it's time to turn into a butterfly, a black swallowtail caterpillar uses silk to tie both its bottom and its back to a sturdy twig. Then the caterpillar's skin splits open to reveal a chrysalis (*kris-uh-liss*), which dangles from the twig like a leaf.



Giant Swallowtail

This caterpillar doesn't mind being told, "You look like poop." In fact, it loves looking like poop, specifically bird droppings. Why? Because bird droppings are splattered nearly everywhere, and nothing eats poop. In other words, the *scat-tastic* camouflage keeps the cat safe from caterpillar crunchers and munchers.



Cecropia Moth

Not only is the cecropia caterpillar brilliantly colored — with red, orange, yellow, and blue bumps on a neon-green body — it also turns into Missouri's largest moth. Adult cecropia moths have a wingspan that can stretch over 6 inches, which is about as big as a tea saucer.



Isabella Tiger Moth

Some folks think you can predict winter weather by looking at the stripes on an Isabella tiger caterpillar (aka woolly bear). If the brown stripe is wide, winter will be mild. If it's narrow, winter will be cold. As you might expect, when you compare one woolly bear to another, their stripes are often different sizes, which means they have nothing to do with forecasting the weather.



Curve-Lined Owlet

These perfectly pokey caterpillars are tough to find because they live on (and eat) something just as spiky as they are: greenbrier brambles. When threatened, this camouflaged cat bends the front half of its body into a tight "U." With its spike sticking up, it looks nearly identical to a brier thorn.



Variegated Fritillary

Variegated fritillaries are stunning at every stage of their life. Adults have wings checkered with orange, tan, and black. Their golden-colored eggs look like tiny cobs of corn. Caterpillars sport black spikes and are lined with orange and white stripes. And the chrysalis, perhaps most stunning of all, gleams like pearl flecked with gold.



Monkey Slug

A monkey slug is neither a monkey nor a slug. It's the larva of a hag moth. The furry "tentacles" covering its back aren't legs — the real legs are hidden beneath all that fur. Monkey slugs can lose a tentacle or two without serious injury. This lets them slip away from predators while the predator is busy trying to choke down a furry fake leg.



Polyphemus Moth

A polyphemus caterpillar weathers winter by snuggling inside a sleeping bag made of leaves. In the fall, the chunky hunk of a caterpillar uses silk to lasso leaves and tie them around itself. Then, it spins a silky cocoon. Over time, the silk hardens into a fuzzy, protective shell, which keeps the pupa safe until it emerges as a moth in May.

Eastern Comma Butterfly

Although they're covered with scary-looking spikes, eastern comma caterpillars are OK to touch. Just don't try to eat one! The multiple-spiked spines are thought to make these inch-long cats tough to swallow for birds, lizards, and other predators.



EASTERN COMMA BUTTERFLY: © HENK WALLAYS / ADOBE STOCK; HUMMINGBIRD CLEARWING MOTH, GEOMETRID MOTH: © GERRY BISHOP / ADOBE STOCK



Hummingbird Clearwing Moth

Butterflies and moths are insects, and all insects have six legs. So why does this clearwing caterpillar look like it has 10? Biologists call the appendages in the middle and back end "prolegs." Caterpillars use them to grip and climb. If you look closely, you can see the "true legs." They're the little blackish-brown things just behind the cat's head.

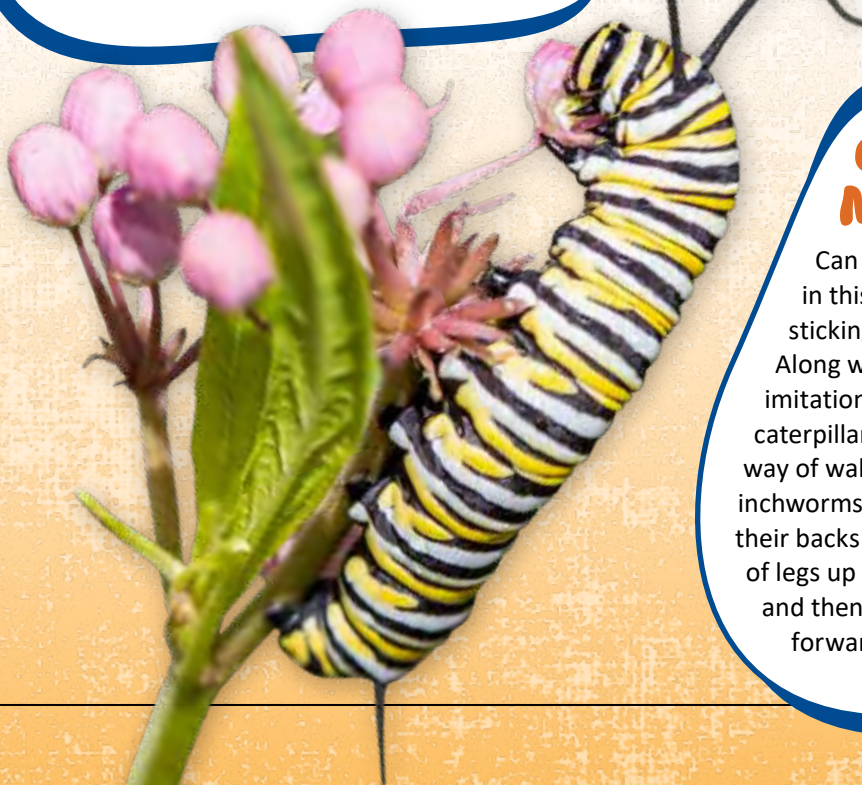


Pipevine Swallowtail

The orange and black colors of a pipevine caterpillar are nature's way of warning predators to BACK OFF! These cats eat pipevine, a poisonous plant. The poisons don't harm the baby swallowtails, but they do make them taste terrible to would-be predators.

Monarch

You are what you eat, and the only thing monarch caterpillars munch is milkweed. Over a dozen kinds of milkweed grow in Missouri, and all of them are poisonous. The poisons don't harm the hungry caterpillars. In fact, they store the poisons in their bodies, which makes them toxic, too.



Geometrid Moth

Can you spot the caterpillar in this photo? It's the tiny twig sticking up from the branch. Along with their impressive imitation skills, geometrid caterpillars have an interesting way of walking. Also known as inchworms or loopers, they hunch their backs and pull their rear set of legs up to meet the front set, and then they move the front set forward to "inch" along.



XPLOR MORE

Can O' Possums

Virginia opossums are marsupials (*mar-soo-pee-uhlz*), like kangaroos and koalas. Mama marsupials raise their babies in a pouch. When the babies grow too large to fit inside comfortably, they ride on mom's back while she wanders around. Opossums have "thumbs," which they use to grip branches while climbing. They also curl their tails around limbs for balance, but they can't hang by their tails — at least not for long.



RULES

- > This game is for two players. If you have more who want to play, take turns.
- > Each player picks a mama opossum (they're the big ones). Dump all of the smaller opossums (the babies) in a pile.
- > Decide which player will go first. Using only one hand, the first player tries to hook the mama opossum's tail onto the arm or tail of one of the babies in the pile.
- > Continue making a chain of opossums until one or more fall off of the chain. At that point, it's the second player's turn.
- > Each baby opossum in the chain is worth one point EXCEPT:
 - Any baby with its tongue hanging out and its eyes OPEN is pretending to be dead ("playing possum"). For each one of these in your chain, add two points.
 - Any baby with its tongue hanging out and its eyes Xed OUT is actually dead. (Nature is tough sometimes!) For each one of these in your chain, subtract one point.
- > The first player to make a chain with 10 points wins. If the pile runs out of opossums before anyone reaches 10, the player with the most points wins.

HERE'S WHAT YOU NEED

- A piece of heavy paper the same size as Page 19
- Scissors
- Pipe cleaners (Pink is perfect!)
- Glue and tape

PREPARE TO PLAY

- 1 Glue heavy paper to the back of Page 19.
- 2 Once the glue dries, cut out each opossum along the dotted lines.
- 3 Snip pipe cleaners into 6-inch lengths. You'll need 18.
- 4 Bend the pipe cleaners into an "S."
- 5 Tape a pipe cleaner onto the back of each opossum so that one end of the pipe cleaner becomes the opossum's "tail," and the other end becomes the opossum's "arm."





NOTE:

Mamas will
only need a pipe
cleaner "tail."



GET OUT!

FUN THINGS TO DO
AND GREAT PLACES
TO DISCOVER NATURE



On May 23, **SMALLMOUTH BASS SEASON** opens on Ozark streams. Slip a canoe in the water, tie a crayfish lure onto your fishing line, and cast it toward places where a hungry smallmouth might be hiding, like behind boulders or near fallen trees.



In April and early May, some of Missouri's most colorful visitors pass through the state. **WARBLERS** are a group of lively, brightly colored, insect-eating songbirds. About 30 different kinds turn up in Missouri. How many can you spot?

NORTHERN PARULA: © DENICAMP | DREAMSTIME.COM

The twilight twinkle of **FIREFLIES** is a sure sign summer's on its way. Look for the blinky-bottomed beetles beginning in late May in weedy backyards, pastures, forest edges, and along streams. Male fireflies twinkle their tushies to court females hiding in low-growing vegetation. If a female likes what she sees, she blinks back.



In May, **MONARCH BUTTERFLIES** arrive from the south and begin laying eggs. Search the undersides of milkweed leaves for tiny, crystalline eggs, each just a bit bigger than a grain of salt. If you find one, check the leaf again in a few days. You might spot a tiny, yellow-and-black-striped caterpillar munching away.



In June, **WHITE-TAILED DEER** have babies. If you find a fawn on your lawn, don't worry. It isn't an orphan. Mama whitetails often leave newborns by themselves for several hours. Keep your pets inside, don't bother the little guy or gal, and mom will soon return.



Looking for more ways to have fun outside? Find out about Discover Nature programs in your area at mdc.mo.gov/events.



WHAT
IS
IT?

— FROM PAGE 3 —



GIANT LEOPARD MOTH

Although they're found statewide, you might have a hard time spotting a giant leopard moth. These stunning, white-winged beauties are strictly nocturnal. During the day, their leopard-like spots help them hide from hungry birds. When they fly at night, ears at the base of each hind wing help them hear the calls of hungry bats. If a leopard moth detects a bat on its tail, it folds its wings and tumbles straight down to avoid being eaten.

GO FIND IT!



Cut out this critter card and take it with you outside.
How many of the things on the card can you find?

RED-EARED SLIDER



SOAKING UP SUNSHINE

Basking in the sun helps a turtle raise its body temperature and produce vitamin D. Sliders often stretch out their legs to absorb more sunshine.

BASKING BUDDIES

Rocks and logs are often covered with sliders, lined up head to toe and stacked atop each other.

SLIDE TO HIDE

The name "slider" comes from this wary turtle's habit of sliding quickly into the water when approached.

TERRIFIC TOENAILS

One way to tell male and female sliders apart is to look at their toenails. Males usually have longer front claws than females.

MEATS AND GREENS

Red-eared sliders eat both meat (like insects and small fish) and plants. Young sliders eat more meat than older sliders do.

ONE
LIE

— FROM PAGE 3 — Lie: 1 (For peregrines, like most birds of prey, females are larger than males.)

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or update your address, visit
mdc.mo.gov/xplor.

FREE TO MISSOURI HOUSEHOLDS

GO FIND IT!

Red-eared sliders are found in rivers, lakes, and ponds statewide, except for a few northern counties. To learn more about these terrific turtles, slide over to mdc.mo.gov/field-guide.

RED-EARED SLIDER

